

Seminar Labex MS2T
“Control of Technological Systems of Systems”

<http://www.utc.fr/labexms2t/>

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Where uncertainty paradoxes come from

Abstract:

Decision scientists and psychometricians have documented a long list of cognitive “biases and heuristics” over the last several decades, which are widely considered to be manifestations of human irrationality about risks and decision making. These phenomena include loss aversion, ambiguity aversion and the Ellsberg Paradox, hyperbolic discounting, and others. We suggest that many if not most of these mistakes arise from the interplay between distinct special-purpose uncertainty processors within the multicameral human brain whose existence is implied by recent clinical and neuroimaging evidence. The psychological and neurological evidence suggests that epistemic uncertainty (i.e., lack of knowledge or ambiguity) and aleatory uncertainty (variation or stochasticity) should not be rolled up into one mathematical concept in risk assessment, but require a two-dimensional view that respects biological realities within the decision-maker.

Short Bio:



Scott Ferson is a senior scientist at Applied Biomathematics, a small-business research firm on Long Island in New York, and adjunct professor at Stony Brook University. He holds a Ph.D. in ecology and evolution from Stony Brook and has over 100 papers and 5 books on risk analysis and related topics. His recent work, funded primarily by NIH and NASA, has focused on developing statistical methods and software to solve quantitative assessment problems when data are poor or lacking and structural knowledge is severely limited.